

Archived Editions (COVID-19 Genomics and Precision Public Health Weekly Update)

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COVID-19 Genomics and Precision Public Health Weekly Update Content

- Pathogen and Human Genomics Studies
- Non-Genomics Precision Health Studies
- News, Reviews and Commentaries

Pathogen and Human Genomics Studies

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 Hadi Yousaf B et al. Respiratory medicine 2021 9 106606

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By aggregating VOC-associated and antibody-selected spike substitutions into a single polymutant spike protein, we show that 20 naturally occurring mutations in SARS-CoV-2 spike are sufficient to generate pseudotypes with near-complete resistance to the polyclonal neutralizing antibodies generated by convalescents or mRNA vaccine recipients. Strikingly, however, plasma from individuals who had been infected and subsequently received mRNA vaccination, neutralized pseudotypes bearing this highly resistant SARS-CoV-2 polymutant spike, or diverse sarbecovirus spike proteins. Thus, optimally elicited human polyclonal antibodies against SARS-CoV-2 should be resilient to

substantial future SARS-CoV-2 variation and may confer protection against potential future sarbecovirus pandemics.

- Covid-19 in the Phase 3 Trial of mRNA-1273 During the Delta-variant Surge (https://www.medrxiv.org/content/10.1101/2021.09.17.21263624v1)
 LR Baden et al, MEDRXIV, September 22, 2021
- Prior Covid-19 and high RBD-IgG levels correlate with protection against VOC-delta SARS-CoV-2 infection in vaccinated Nursing Home Residents
 (https://www.medrxiv.org/content/10.1101/2021.09.21.21263880v1)

 H BLain et al, MEDRXIV, September 21, 2021
- Absence of Excess Mortality in a Highly Vaccinated Population During the Initial Covid-19 Delta Period. (https://www.medrxiv.org/content/10.1101/2021.09.16.21263477v1)
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To support COVID-19 pandemic planning, we develop a model-inference system to estimate epidemiological properties of new SARS-CoV-2 variants of concern using case and mortality data while accounting for under-ascertainment, disease seasonality, non-pharmaceutical interventions, and mass-vaccination. Applying this system to study three variants of concern, we estimate that B.1.1.7 has a 46.6% (95% CI: 32.3–54.6%) transmissibility increase but nominal immune escape from protection induced by prior wild-type infection; B.1.351 has a 32.4% (95% CI: 14.6–48.0%) transmissibility increase and 61.3% (95% CI: 42.6–85.8%) immune escape; and P.1 has a 43.3% (95% CI: 30.3–65.3%) transmissibility increase and 52.5% (95% CI: 0–75.8%) immune escape.

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The study included 1482 case participants and 3449 control participants. Vaccine effectiveness for partial vaccination was 77.6% (95% confidence interval [CI], 70.9 to 82.7) with the BNT162b2 vaccine (Pfizer–BioNTech) and 88.9% (95% CI, 78.7 to 94.2) with the mRNA-1273 vaccine (Moderna); for complete vaccination, vaccine effectiveness was 88.8% (95% CI, 84.6 to 91.8) and 96.3% (95% CI, 91.3 to 98.4), respectively. Vaccine effectiveness was similar in subgroups defined according to age (<50 years or =50 years), race and ethnic group, presence of underlying conditions, and level of patient contact.

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 Assessment of a Program for SARS-CoV-2 Screening and Environmental Monitoring in an Urban Public School District (https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2784428?resultClick=1)
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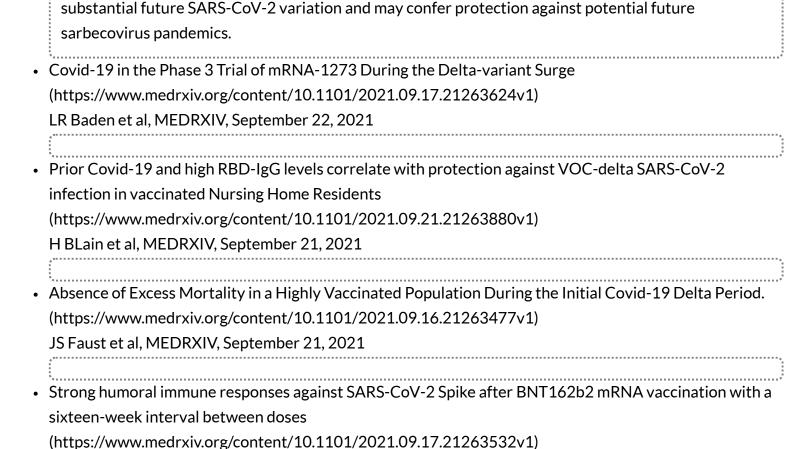
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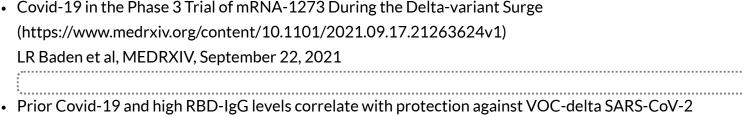
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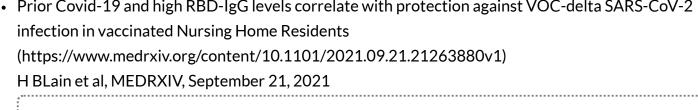
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